



# Chapter 3: Electricity Transmission Infrastructure

IEPR Workshop on Staff's Draft Report  
*Preliminary Electricity and Natural Gas Infrastructure Assumptions*

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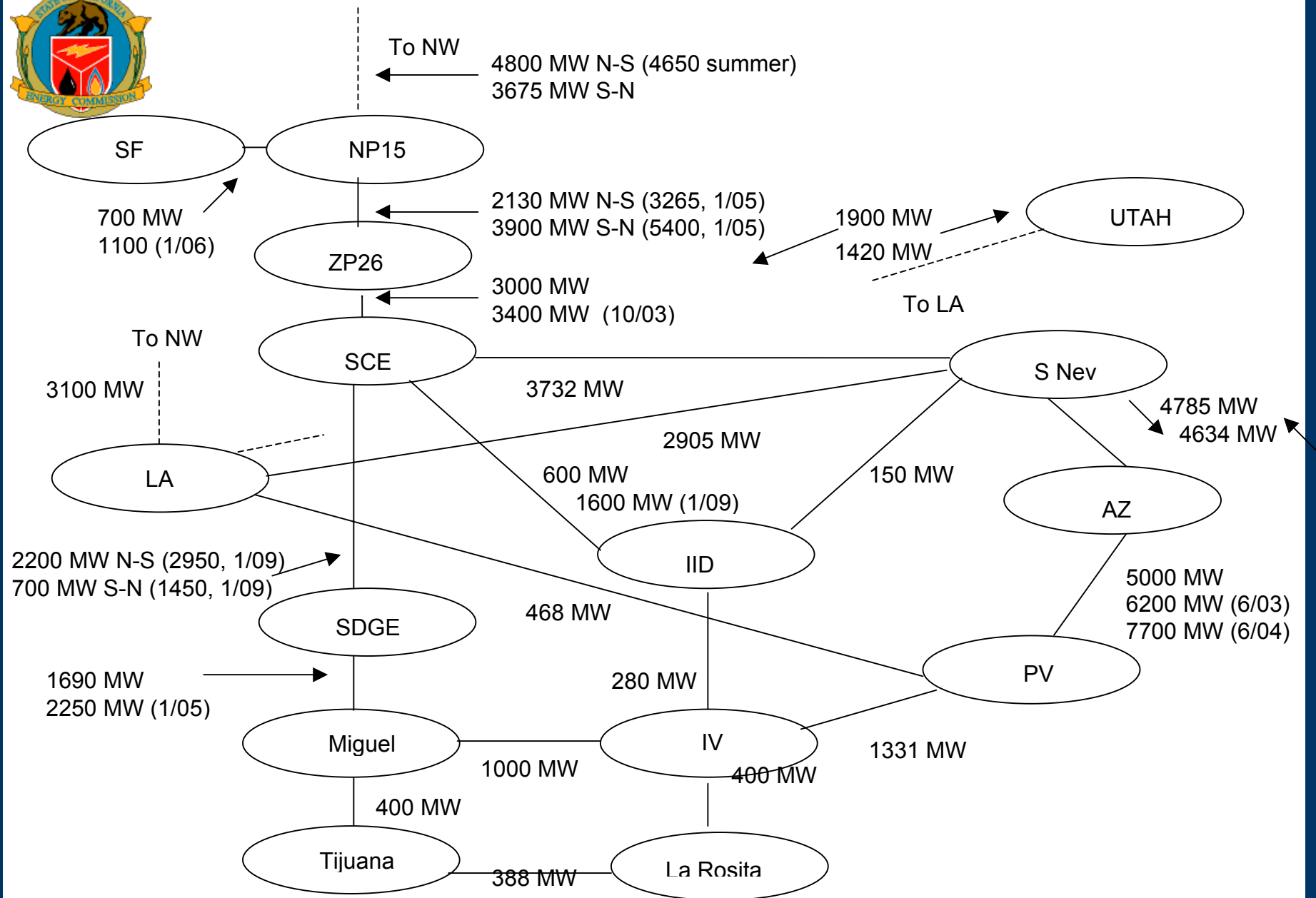
# Topics Covered

- Major Transmission Projects Modeled
- Local Reliability Projects
- Economic Projects
- Transmission to Support Renewables
- Out of State Projects



## Major Transmission Projects Modeled

- Path 45 (Mexico to SDG&E)
- Path 26 (Midway to Vincent)
- Path 15 (Los Banos to Gates)
- Miguel to Mission
  - Includes Imperial Valley Substation Upgrades
- Jefferson to Martin
- Path 46 (West of River)
- Valley to Rainbow





# Path 45 Upgrade

- 230 kV line reconductoring from La Rosita to Imperial Valley Substation completed in November 2001
- Purpose: Increase transfer capability
- CPUC CPCN process: Exempt
- Current status:
  - Path rating in both directions has been increased from 408 MW to 800 MW EXCEPT for south-to-north in summer
  - WECC approval of S-N summer rating expected soon
- Staff modeling assumption: 800 MW bi-directional as of January 2003



## Path 26 - Midway (PG&E) to Vincent (SCE)

- Short-term upgrade (primarily operating procedure change)
- Purpose: Economic (increase transfer capability and relieve congestion)
- CPUC CPCN process: Exempt
- Current status:
  - Under construction
  - SCE predicted on-line date is June 2003
  - PG&E predicted on-line date is September 2003
- Staff modeling assumption: Increase from 3,000 to 3,400 MW bi-directional as of October 2003



## Path 15 (Los Banos to Gates)

- Add a third 500 kV line and other fixes
- Project is sponsored by WAPA, Trans-Elect, and PG&E
- Purpose: Economic (increase transfer capability and relieve congestion)
- CPUC CPCN process: Exempt (per applicant)
- Current status: Pre-construction.
- Staff modeling assumption: Increase S-N rating from 3,900 to 5,400 MW and N-S rating from 2,130 to 3,265 MW as of January 2005



## SDG&E Miguel to Mission

- Upgrade existing 138/69 kV line to 230 kV between Mission and Miguel (M-M); upgrade and add transformer at Imperial Valley (IV)
- Purpose: Economic (increase transfer capability and relieve congestion)
- CPUC CPCN process: A.02-07-022 filed on July 12, 2002
- Current status: January 14, 2003 ALJ Proposed Decision states:
  - Both projects are economic and in the public interest
  - No CPCN is needed for IV upgrades
  - CPCN is needed for M-M (but will be expedited)
- Staff modeling assumption: Increase from 1,690 to 2,250 MW into downtown San Diego as of January 2005





## PG&E Jefferson to Martin

- New 230 kV line
- Purpose: Reliability
- CPUC CPCN process: A.02-09-043 filed on September 30, 2002
- Current status: Pre-hearing conf. held on January 10, 2003
- Staff modeling assumption: Increase from 700 to 1,100 MW (North of Path 15 to City of San Francisco) as of January 2006



## Path 46 (West of River)

- Conceptual project involving the southern portion of Path 46
- Purpose: Accommodate possible future geothermal development at Salton Sea that may respond to the Renewable Portfolio Standard
- CPUC CPCN process: Would likely be required
- Current status: CPUC ALJ's January 29, 2003 ruling in I.00-11-001 has directed the utilities to prepare a conceptual study for Coral Power, LLC's suggested Imperial Valley to Devers 500 kV line
- Staff modeling assumption: Increase IID-to-SCE interconnection from 600 to 1,600 MW bi-directional as of January 2009



# SDG&E Rainbow to Valley

- New 500 kV line from existing SCE Valley Substation to a new SDG&E Rainbow Substation
- Purpose: Reliability
- CPUC CPCN process: A.01-03-036 filed on March 23, 2001. D.02-12-066 found the project neither needed for reliability until at least 2008, nor justifiable based on economics.
- Current status: CAISO and SDG&E filed for rehearing of D.02-12-066 on January 23, 2003. No action taken yet by CPUC.
- Staff modeling assumption: Increase SDG&E-to-SCE path rating from 700 to 1,450 MW and SCE-to-SDG&E path rating from 2,200 to 2,950 MW of January 2009



## Local Reliability Projects

- Definition: Projects needed to conform with CAISO Planning Standards
- Timeframe: Within 5 years (2002 process)
- PG&E, SDG&E, and SCE update their plans annually and submit to CAISO
- Current status: 2002 assessments have been completed. 2003 assessment process has been initiated.



# Local Reliability Projects

- PG&E
- SDG&E
- SCE
- Imperial Irrigation District
- Western Area Power Administration (Sacramento Area)
- City of Santa Clara/Silicon Valley Power



# PG&E Service Area - 2002 and beyond

- Sources for staff information
  - December 11, 2002 *PG&E's 2002 Electric Transmission Grid Expansion Plan (Final)*
  - February 3, 2003 *Monthly Project Status Report of Pacific Gas and Electric Company*
  - January 17, 2003 *2002 California ISO Controlled Grid Study Report*



## PG&E Service Area - 2002 and beyond

- See Staff Draft Report for Specific Projects
  - Humboldt: Two projects
  - North Coast and North Bay: Eight projects
  - Central Coast and Los Padres: Three projects
  - North Valley: Five projects
  - Central Valley: 19 projects
  - Greater Fresno and Kern: 18 projects
  - Greater Bay: 41 projects



# SDG&E Service Area - 2002 and beyond

- Sources for staff information
  - January 30, 2003 *SDG&E 2002 Grid Assessment Study & Transmission Expansion Plan Final Report*
  - February 3, 2003 *Status Report of San Diego Pacific Gas & Electric Company for January 2003*
  - January 17, 2003 *2002 California ISO Controlled Grid Study Report*





# SDG&E Service Area - 2002 and beyond

- See Staff Draft Report for Specific Projects
- Includes 23 projects



## SCE Service Area - 2002 and beyond

- Sources for staff information
  - December 5, 2002 ***CAISO Controlled SCE Transmission Expansion Plan 2003-2007, Rev. 2***
  - February 3, 2003 ***Monthly Compliance Report (February 2003) of Southern California Edison Company (U338-E) Regarding Status of Transmission Projects***
  - January 17, 2003 ***2002 California ISO Controlled Grid Study Report***



# SCE Service Area - 2002 and beyond

- See Staff Draft Report for Specific Projects
- Includes 18 projects
- Tehachapi Transmission Line project
  - SCE completed the Phase 2 Tehachapi Transmission Conceptual Study on Jan. 15, 2003
  - CPCN would be required
  - Current status: In planning stages; projected on-line date is December 2006



# Imperial Irrigation District

- Two expansion projects, both from Buck Blvd. Substation to SCE's Devers Substation, being considered to serve IID load and provide outlet for Blythe II generation
  - *Correction to Staff Draft Report: A third option from Buck Blvd. Substation to IID's Midway X Substation has been dropped*
- Current status: Blythe II (520 MW) in CEC permitting process. Project changes are causing delays in schedule.
- FYI - - Blythe I (also 520 MW) expected to become operational on April 15, 2003



# Western Area Power Administration Sacramento Area

- Proposed project includes
  - reconductoring double-circuit 230 kV Elverta-Tracy
  - new double-circuit 230 kV O'Banion-Elverta
  - various realignments
- Purpose: reliability
- Current status: EIS comment period ended Dec. 20, 2002. Distribution of Final EIS in May 2003. Currently looking for funding sources. No projected in-service date.



# City of Santa Clara/Silicon Valley Power

- New 230 kV line from SVP's Northern Receiving Station to PG&E's Los Esteros Substation
- Purpose: Meet increased Santa Clara load
- Current status: Construction of 230 kV line expected to begin in May 2003, with completion by end of 2004. PG&E's Los Esteros Substation expected to be operational in May 2003.



# Additional Economic Projects

- Projects already discussed
  - Path 26 (Midway-Vincent short-term solution)
  - Path 15 (Los Banos-Gates)
  - Miguel-Mission and Imperial Valley Substation
- Path 26 Long-term Solution
  - Description: Reconductor 500 kV segment and upgrade Midway and Vincent Substations
  - Purpose: Increase transfer capability to 4,000 MW bi-directional and relieve congestion
  - CPUC CPCN Process: Not required.
  - Current status: In planning stage; on-line date TBD



# Transmission Projects to Support Renewables

- Per SB 1038 and 1078, the CEC, CPUC, CAISO, and utilities will work together to determine need for transmission facilities to meet Renewable Portfolio Standard goals
  - CEC to provide draft forecast of renewable development to CPUC by July 1, 2003
  - CPUC will then create a transmission plan
- Staff modeling assumption: Increase IID-to-SCE interconnection from 600 to 1,600 MW bi-directional as of January 2009





# Out of State Projects

- Trans-Elect and Dine Power Authority are developing the 462-mile 500 kV Navajo Transmission Project from Four Corners to Las Vegas area
  - No impact on California unless other West-of-River upgrades are made
  - Tentative on-line date is 2005
- CAISO has initiated the Southwest Transmission Expansion Plan (STEP) ad-hoc study group
  - Goal is to evaluate projects that would facilitate a robust transmission system among Arizona, Nevada, Mexico and Southern California



# Questions to be addressed

- Are staff's transmission upgrade assumptions reasonable?
- What other projects are necessary to maintain grid reliability in the next 10 years?
- What other projects could provide economic benefits?
- What other projects are needed to accommodate renewables?